
TEST INFORMATION GUIDE

This test information guide provides a summary of concepts that are tested on the written (multiple choice) examination for the **Communications Equipment Technician I** job. This information can be reviewed in combination with the class specification and examination announcement to assist you in preparing for the examination.

I. PRACTICAL ELECTRONICS**(32 Questions)**

Employees in this job are responsible for constructing electronic circuits and equipment from schematic diagrams, or incorporating recommended modifications. Employees are also involved in fabricating covert mobile radio antenna systems to accommodate unmarked cars. The job may require employees to study service literature and schematic diagrams and, utilizing electronic test equipment, locate circuit faults in mobile and base station two-way radios, portables, radar speed meters and replace defective components using various hand tools. These critical tasks require one to possess knowledge of what can be considered practical electronics. Test question topics covered in this section include:

- Common symbols used in electronic circuit schematics (i.e., symbols used to denote diodes, transmitters, amplifiers, etc.);
- Calculating resistance;
- Measuring electronic current;
- Alternating current and direct current characteristics;
- Characteristics and functions of transistors;
- Electronic components found in integrated circuits;
- Digital radio modulation techniques.

II. TWO-WAY RADIO COMMUNICATION**(16 Questions)**

Employees in this job diagnose and correct circuit faults in a variety of complex electronic equipment items including two-way mobile radios and hand-held portables. This important responsibility requires the employee to know the principles of two-way radio communication. Test question topics in this section of the exam include:

- Using oscilloscopes;
- Purpose of a “squench” circuit;
- Characteristics of VHF frequency bands;
- Methods for detecting FM;
- Two-way communication terms (e.g., selectivity; asynchronous; synchronous; de-multiplexing; impedance; etc).

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III. ELECTRONIC TESTING EQUIPMENT

(20 Questions)

This job requires employees to repair, adjust and calibrate a variety of radio transmitting equipment and related communications circuitry. These tasks require the use of hand tools, soldering guns and various electronic test equipment. In order to perform these tasks effectively, the employee must be knowledgeable of various electronic testing equipment and its application to electronic communication tasks. The questions in this section of the exam test cover topics such as:

- Using a RF voltmeter to determine resonance;
- Using an oscilloscope;
- Impedance meters and ammeters;
- Soldering electrical equipment;
- Low-pass filters;
- Equipment used to check the state of charge of a lead acid battery.

IV. VHF/UHF RADIO COMMUNICATION EQUIPMENT

(16 Questions)

Employees in this job are responsible for making frequency and modulation adjustments to VHF/UHF radio transmitters and related communications circuitry. It is critical that employees be able to maintain and repair such equipment as the need arises. This section of the exam presents questions that test your ability to repair and maintain radio communication equipment. Test question topics covered in this final section of the exam include:

- Using selective voltmeters;
- Measuring the CTCSS tone deviation on a VHF FM transmitter;
- Purpose of stub tuning;
- Use of a frequency counter;
- Methods commonly used to measure receiver sensitivity in VHF FM receivers;
- Common IF frequencies found in communications receivers;
- Purpose of a noise blanker;
- Use of tone control signaling.